



## **A Backward Lagrangian Study of the Tropospheric Stratification with MOZAIC data**

**J. Brioude** (1), R. Zbinden (1), V. Thouret (1), J. P. Cammas(1), A. Stohl (2)

(1) Laboratoire d'Aérodologie, UMR 5560, Toulouse, France, (2) NILU, Kjeller, Norway  
(contact: [brij@aero.obs-mip.fr](mailto:brij@aero.obs-mip.fr))

The Lagrangian dispersive model FLEXPART is used to investigate the origin of layers and the stratification of the troposphere by coherent airstreams at midlatitudes. Observations used are the MOZAIC vertical profiles of ozone, carbon monoxide, and water vapour (<http://www.aero.obs-mip.fr/mozaic/>). A case study over Frankfurt shows a layering that includes two tropopause folds (TF) at 2.5 and at 5.0 km altitude on top of each one are found air masses extracted from the maritime boundary layer by the warm conveyor belts (WCB) of two Atlantic extratropical lows. Characteristics of layers associated with TFs and WCBs are described: geographical origin, free-tropospheric resident times, contribution to the tropospheric columns of ozone, carbon monoxide and water vapour. The relevance of the clustering method in FLEXPART backward simulations used for the case study is shown in the perspective of a systematic use of FLEXPART to characterize the tropospheric layering revealed by MOZAIC data.