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Multi-model simulations of long range transport during the ICARTT period.

M.J. Evans (1), I Bey (2), A.M. Fiore (3), G. Folberth (2), V. Huijnen (4), S. Koumoutsaris (2), P. Moinat (5), M. Schultz (6), S. Schröder (6), and ITOP/INTEX/NEAQS (7)

(1) School of Earth and Environment, University of Leeds, Leeds, United Kingdom, (2) EPSL, Lausanne, Switzerland, (3) NOAA GFDL, 201 Forrestal Rd, Princeton, NJ, USA, (4) Climate Research - Chemistry and Climate, KNMI, De Bilt, The Netherlands, (5) CNRM, Toulouse, France, (6) Forschungszentrum Jülich, ICG-2: Troposphäre, Jülich, Germany, (7) ITOP/INTEX/NEAQS Science teams

The Task Force on Hemispheric Transport of Air Pollution (TF HTAP) has initiated a variety of model inter-comparisons to assess the ability of global atmospheric chemistry transport models to simulate the long range transport of air pollution. We report here on the initial results of Experiment Set 3 which compares the contributing models against data collected during the international ITOP/INTEX/ICARTT campaigns over the North Atlantic during the summer of 2004.

The basis of these comparisons is a cluster analysis approach which aims to objectively define the characteristic airmasses found over the North Atlantic during this period. From previous analysis of the observations we have identified six characteristic cluster / airmasses types - biomass burning, low level outflow, upper level outflow, moist lower troposphere, marine and upper troposphere. First, we compare the composition of these observationally derived clusters to those found from each of the models. We then investigate the relationships between the species within each cluster using a principal components approach.