Geophysical Research Abstracts, Vol. 7, 00048, 2005
SRef-ID: 1607-7962/gra/EGU05-A-00048


# Modelling tracer transport by a cumulus ensemble: mean ascent and lateral boundary conditions.

**M. Salzmann**[1], M. G. Lawrence[1], V.T.J. Phillips[2], L. J. Donner[2]

[1] Max-Planck-Institute for Chemistry, Department of Atmospheric Chemistry, PO Box 3060, 55020 Mainz, Germany
[2] Geophysical Fluid Dynamics Laboratory, NOAA, Princeton University, PO Box 308, Princeton, NJ 08542, USA

The vertical transport of idealized tracers by a cumulus ensemble at the TOGA COARE site is modelled during a 7 day episode using 2D and 3D cloud resolving setups of the Weather Research and Forecast model (WRF). Lateral boundary conditions for tracers, water vapour and wind are specified and the advection of trace gases across the domain's lateral boundary is considered. Since CRMs do not reproduce the large scale circulation and the associated mean upwards velocity in the TOGA COARE region, a large scale advection tendency for tracers is defined based on the mean vertical velocity derived from observations. Including this tendency partially compensates for the relatively rapid downwards transport of trace gases due to the mesoscale subsidence. Benefits and problems of this setup, possible solutions as well as the need to include large scale tracer advection tendencies in different setups will be discussed.