



GLOBAL AND REGIONAL DISTRIBUTIONS OF TRACERS: IMPACT OF DEEP CONVECTIVE TOWERS AND ASSOCIATED UPPER-TROPOSPHERIC STRATIFORM CLOUDS

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Observations have shown that both deep convective towers and associated upper-tropospheric stratiform clouds contribute large fractions of the precipitation from many convective systems. A cumulus parameterization which explicitly includes both deep convective towers and associated upper-tropospheric stratiform clouds has been incorporated in the GFDL/NOAA AM2 general circulation model and will be used to analyze the contributions of deep convective towers and associated upper-tropospheric stratiform clouds to transport of atmospheric tracers. The relative contributions of these two components of deep convective systems to tracer transport will be analyzed. In addition to upper-tropospheric stratiform clouds linked to deep convection, mesoscale and convective-scale downdrafts modify the mass fluxes associated with deep convective systems, as well as tracer transport. The effects of these mesoscale processes on tracer transport will also be discussed.