



CTM and Trajectory Studies of Transport to the Stratosphere from the TTL

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At tropical latitudes, convection rapidly transports air to the tropical tropopause layer (TTL). If convective detrainment occurs in a region of positive radiative heating, this air may subsequently ascend into the stratosphere. 'Deep' convection occasionally penetrates the cold point and carries tropospheric air into the stratosphere. Either way, boundary layer air may be transported relatively quickly to the stratosphere via the TTL. If this transport is sufficiently quick, short-lived species may reach the stratosphere and contribute to the depletion of stratospheric ozone.

The results to a TTL tracer experiment using the tropospheric CTM, p-TOMCAT will be presented. The aim of this tracer experiment was to identify in what region/s most air enters the stratosphere and from what region/s of the TTL most of this air comes. Additionally, timescales of transport to the stratosphere from the TTL, based on trajectory calculations, will be presented. The intention is to combine these timescales with the results to the TTL tracer experiment to identify in what region/s most short-lived species may reach the stratosphere.