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**TITLE:** Stratosphere-to-Troposphere Transport of Ozone Induced by Thunderstorms Observed in the DC3 Experiment

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**ABSTRACT BODY:** The role of deep convective thunderstorms in redistributing trace gases throughout the troposphere and in coupling the stratosphere and troposphere is an important issue for chemistry-climate interaction. During the DC3 experiment, The NASA DIAL ozone Lidar on the DC-8 research aircraft captured a 2D cross section of stratospheric air wrapping around the front edge of a leading-line -trailing-stratiform mesoscale convective system (MCS). The MCS circulation pulled stratospheric air, with greater than 200 ppbv of ozone, into the upper troposphere. This transport behavior is reproduced in a simulation using the WRF model. The Lidar also captured the shedding of stratospheric air, with ozone near 100 ppbv, to the middle troposphere. Tracer correlations from the DC-8 in situ measurements further identify that a number of ozone enhancement events in the middle troposphere are likely results of storm-induced transport from the stratosphere. These observations provide important evidence that the transport from the stratosphere induced by thunderstorms may be a significant source of ozone in the middle to upper troposphere during the summer season.

**KEYWORDS:** 0368 ATMOSPHERIC COMPOSITION AND STRUCTURE Troposphere: constituent transport and chemistry.

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### Additional Details

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