

[Interactive
Comment](#)

Interactive comment on “Influence of corona discharge on the ozone budget in the tropical free troposphere: a case study of deep convection during GABRIEL” by H. Bozem et al.

Anonymous Referee #2

Received and published: 21 April 2014

This manuscript presents aircraft observations of trace gases taken in the inflow and outflow of a deep convective cloud over Suriname, South America. Enhanced ozone was noted in the outflow. The authors have done a comprehensive job in showing that neither photochemistry or transport can account for this enhancement. They suggest that coronal discharge could explain the additional ozone that was observed in the outflow, and perform calculations to estimate the ozone production per flash. The paper is very well written, and I recommend publication after some minor revisions outlined below.

p. 5241, line 5: change to "...was only ~12% less than the value in the..."

C1610

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)



p. 5241, lines 9-10" "....convective transport to the upper troposphere with only little dilution."

p. 5247, line 2: "....and entrained air from outside the cloud at the same altitude as the outflow...."

p. 5247, line 8: "....was entrained from the upper troposphere."

Conclusions Section: Many deep convective clouds have been penetrated by research aircraft over the last nearly 30 years, and ozone enhancements have very rarely been found in fresh anvil outflow. Why is the ozone production from coronal discharge very rarely detected in field measurements? The authors should at least speculate on why this is the case.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 5233, 2014.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)