

Abstract Submitted
for the NMC16 Meeting of
The American Physical Society

Corona Discharge Contributions to the Tropospheric Ozone Budget GILBERT RIVERA, GARY MORRIS, PAUL WALTER, St. Edward's University, ALEX KOTSAKIS, University of Houston — In the troposphere, ozone can form via reactions of hydrocarbons and NO_x in the presence of sunlight. Ozone can also be formed from corona discharges, which are caused when hydrometeors (i.e., ice crystals, ice pellets, or hailstones) approach each other. This leads to significant ionization of the air around the hydrometeors and causes charges to separate in the clouds, which may assist in the production of tropospheric ozone. On September 5, 2013, in Houston, balloon measurements showed high levels of ozone during the ascent as a storm was approaching and low levels during the descent less than two hours later. Our hypothesis is that on days similar to September 5, 2013, the high levels of ozone are a result of the corona discharges in the clouds before a storm. We determine the frequency of such events by analyzing a large data set from Huntsville, AL. In addition, we investigate the contributions due to corona discharges on the tropospheric ozone budget.

Gilbert Rivera
St. Edward's University

Date submitted: 15 Sep 2016

Electronic form version 1.4