Abstract Submitted
for the 4CF15 Meeting of
The American Physical Society

Automating Measurement of Continuing Current in Lightning Flashes[1] JOSE MARTINEZ, RICHARD SONNENFELD, New Mexico Tech Physics Dept. — Continuing current (CC) is defined as an ongoing current (duration: 0.01 s 0.5 s) in the 100 Ampere range following a lightning return stroke. Lightning flashes that also have CC are known for initiating forest fires. Continuing current detection is automated by combining NLDN (National Lightning Detection Network) and LEFA (Langmuir Electric Field Array) datasets. The automating algorithm counts the number of flashes in a single minute of data and the number of return strokes of an individual lightning flash; records the time and location of each return stroke; and uses the time derivatives of the Efield between return strokes to recognize whether a continuing current signal exists within the interval. When detected, the duration and magnitude of continuing current signal is measured. A relationship between the presence of CC, stroke order, interstroke interval and which of the multiple channels to ground is active is sought. The dataset used is a few hundred flashes within 10 km of Langmuir Lab, New Mexico measured during the summer 2013 monsoon season.

[1]Vaisala Corp. graciously provided NLDN data, LEFA was created with NSF grant 0724771

Jose Martinez
New Mexico Tech Physics Dept.

Date submitted: 10 Sep 2015 Electronic form version 1.4