Abstract Submitted
for the 4CF12 Meeting of
The American Physical Society

Analysis of Electric Field Change, Interferometric, and Lightning Mapping Data to Study Intra-Cloud Lightning JEFF LAPIERRE, MIKE STOCK, NMT, MANABU AKITA, Osaka University, RICHARD SONNENFELD, PAUL KREHBIEL, WILLIAM RISON, NMT, ZEN KAWASAKI, Osaka University, HARALD EDENS, NMT — While return stroke and leader waveforms are increasingly well understood in cloud-to-ground flashes, the precise origin of recoil leaders, K-changes, and M-components remains uncertain. Also, the structure of the electric field change from intra-cloud flashes remains poorly understood. Considerable progress has been made via comparing electric field data to Lightning Mapping Array (LMA) data (Winn et al. 2011), but the fast changes in electric field, such as K-changes, are only coarsely resolved in LMA data. In order to better resolve such fast electric field changes, we used the recently upgraded Continuous Broadband Digital Interferometer (Continuous DITF) in unison with the Langmuir Electric Field Array (LEFA) and the LMA to better understand the sharp features in electric field waveforms. The LMA provides 3D localization of sources detected by the Continuous DITF and, when synchronized with LEFA data, reveals how charges move during a flash. Features in the electric field corresponding to recoil leaders in intra-cloud flashes have already been detected, and we expect continued studies will allow us to investigate recoil leaders, K-changes, and M-components. Winn, W. P., G. D. Aulich, S. J. Hunyady, K. B. Eack, H. E. Edens, P. R. Krehbiel, W. Rison, and R. G. Sonnenfeld (2011), Lightning leader stepping, K changes, and other observations near an intracloud flash, *J. Geophys. Res.*, 116, D23115, doi:10.1029/2011JD015998.

Jeff Lapierre
NMT

Date submitted: 21 Sep 2012 Electronic form version 1.4