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April 27-30, 2020
Broomfield, Colorado, USA

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Comparison of Far Electric Field Waveforms Produced by Rocket-Triggered-Lightning Strokes and Subsequent Strokes in Natural Lightning

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Abstract

Using electric field records obtained at the Lightning Observatory in Gainesville (LOG), Florida, we examined in detail the characteristics of far electric field waveforms produced by rocket-triggered lightning (RTL) return strokes and subsequent return strokes in natural cloud-to-ground lightning. Data for 139 negative return strokes in 26 flashes triggered by a rocket extending a grounded wire toward the overhead thundercloud at Camp Blanding (45 km from LOG) in 2013-2016 and 184 negative subsequent return strokes in 44 natural lightning flashes that occurred in 2013-2015 at distances ranging from 35 to 55 km from LOG were used for the analysis. Natural lightning field waveforms tend to be wider and to have longer risetimes than rocket-triggered lightning waveforms. The magnitude of slow front is of the order of 10% of the overall field peak for both RTL and natural lightning.

Topic Areas

Lightning Physics, Characteristics and Measurements, Tower-Initiated and Rocket Triggered Lightning

Submission Format

Oral