

Supporting Information for

A Rocket-Triggered Lightning Flash Containing Negative-Positive-Negative Current Polarity Reversal during its Initial Stage

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Contents of this file

Figures S1 to S2.

Additional Supporting Information (Files uploaded separately)

Caption for Movie S1

Introduction

This supporting information provides some additional figures and an animated version of the VHF lightning location results that can support the analysis of this study. Data of these figures and movies were all obtained during the observation on July 14, 2015, in the SHandong Triggering Lightning Experiment, in Shandong Province, China.

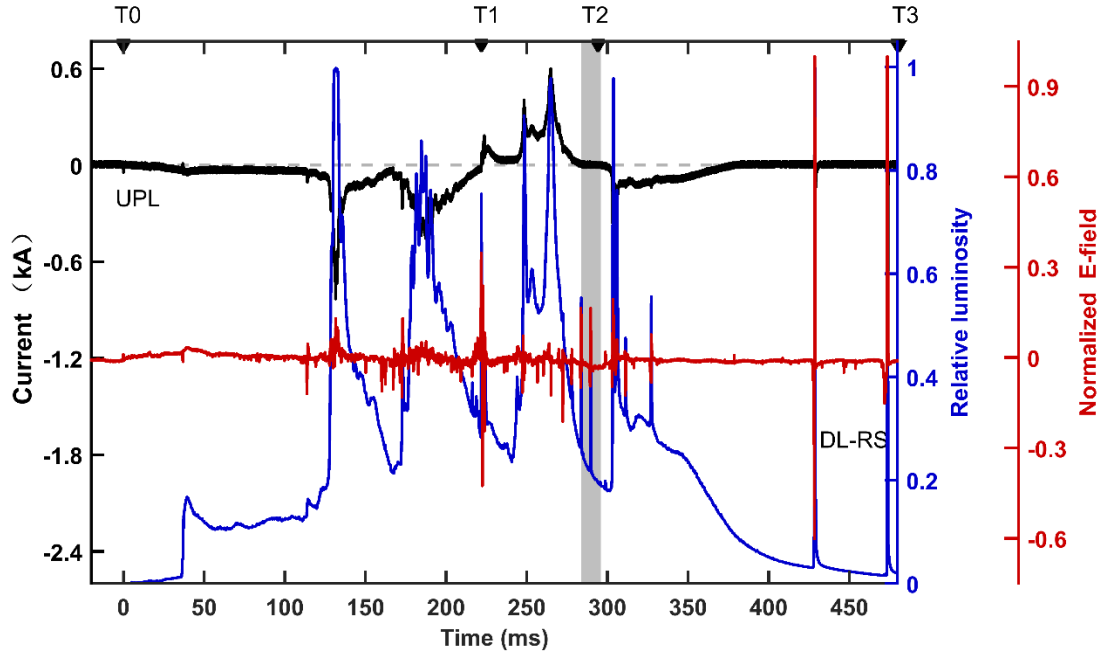


Figure S1. Time variation of current (black), relative luminosity (blue), and normalized fast electric field change (red) for the whole triggered bipolar lightning flash. The region shown in the inset of Figure 4c is also marked by a shaded gray region here. The luminosity was larger than zero near the end of stage 2 (marked by the shaded gray region) indicating that trunk channel remained luminous. The relative luminosity is obtained using the average of all the brightness of trunk channel in the high-speed video images. The obtained luminosity then is normalized.

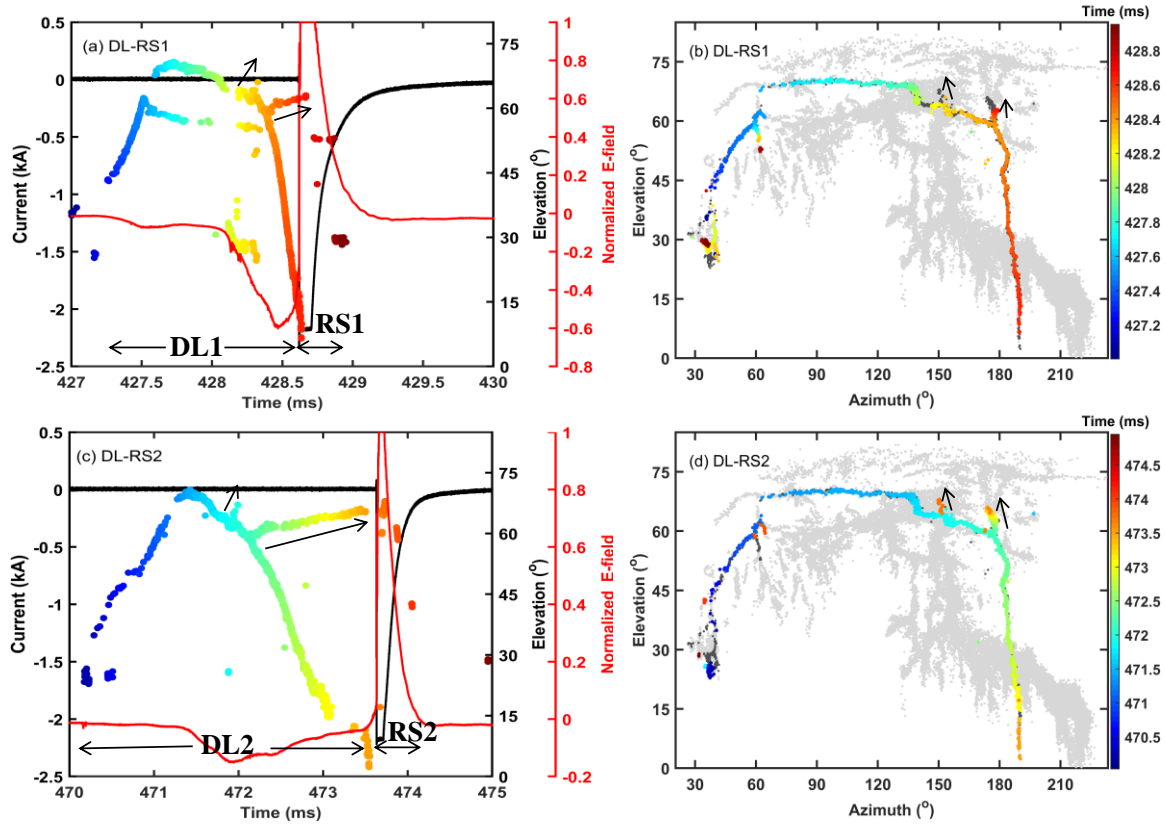


Figure S2. Time variation of current (black), electric field (red) and lightning VHF source elevation (blue to red) for the two dart leader-return strokes (a and c). 2D lightning location map for the two dart leader-return strokes (b and d), the color (from blue to red) for the lightning sources represents variation of time. During the development of the two dart leaders DL1 and DL2, some radiation sources were detected to propagate from a branching point into previous decayed positive branch, as indicated by black arrows in b and d.

Movie S1. Animated lightning VHF sources for the triggered bipolar lightning flash. The time span for each frame is 3 ms. Dark gray dots depict the two dart leader-return stroke processes occurred in stage 3. Light gray dots depict the lightning sources occurred before that frame. Color (from blue to red) represents the time variation of the lightning VHF sources.