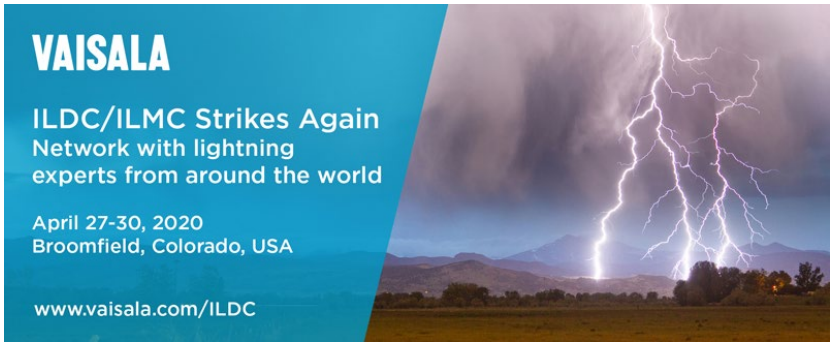

Vaisala Charge Transfer overview and initial validation

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Abstract

In 2019, Vaisala introduced a beta version of a new Charge Transfer enhancement to our lightning data services available from the U.S. National Lightning Detection Network (NLDN™) and GLD360™. Charge Transfer is based on combining observations of the positions, times, and waveform characteristics of cloud-to-ground (CG) strokes from NLDN or GLD360 with observations of continuous near-IR "optical" emissions by the new Geostationary Lightning Mapper (GLM) instruments aboard the GOES-16 and GOES-17 satellites. The first objective of Charge Transfer is to identify those CG strokes that are followed by continuing current (CC). In 2019, we used measurements from slow E-field change instruments developed by the New Mexico Institute of Mining and Technology (NMT) in combination with Lightning Mapping Arrays (LMAs) to validate the capability of identifying CC events, with measurements taken both at NMT's Langmuir Laboratory and to the northeast of Denver. In this paper, we provide an overview of the Charge Transfer beta product as of late 2019 and a detailed description of the 2019 experiments in New Mexico and Colorado. We also provide some analysis of the performance of the GLMs, as it turns out that GLM performance is a limiting factor on the performance of the CC identification and quantification.

Topic Areas

Lightning Detection from Space: Performance, Research and Applications

Submission Format

No preference