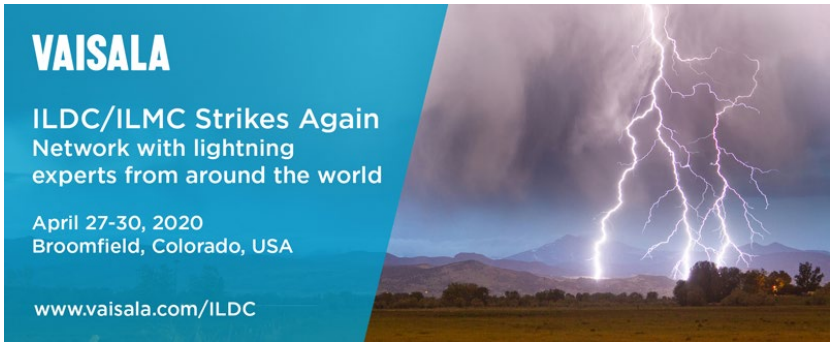

Observation of VHF events occurred with lightning

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Abstract

We are observing lightning in two areas of central Japan, where many lightning flashes occur in summer and winter. We use the Chubu Electric Power LLS (Lightning Location System) to detect the position of lightning which occurs in these areas. In addition, we use a VHF broadband interferometer system, electric field sensors, and high-speed video cameras to understand the electric discharge characteristics of lightning in detail.

Since 2016, we have also used TLS200 sensors, in an effort to observe VHF events that accompany lightning over a wide area. The sensors we use are four sensors that are part of the JLDN (Japanese Lightning Detection Network) operated by Franklin Japan Corporation. The TLS200 sensor is a lightning sensor which includes the capability to observe VHF events.

It is known that many VHF events will occur before and after the lightning return stroke. A lightning flash often has continuing current whose duration may occasionally exceed hundreds of milliseconds. Continuing current is one of the factors that contributes to significant increases in the amount of electric charge associated with a lightning discharge. Since VHF events also occur during the continuing current phase, the existence of continuing current may be able to be estimated based on the duration of VHF events. In this paper, we analyze VHF events relevant to continuing current, and discuss the relationship of between the two.

Topic Areas

Lightning Physics, Characteristics and Measurements

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