

CONTROL ID: 1806752

TITLE: Ship-borne Radio and GLD360 Measurements of Intense Oceanic Lightning

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ABSTRACT BODY: Recent studies with the GLD360 lightning geo-location network have shown that the peak current intensity of cloud-to-ground (CG) lightning is more powerful over the ocean than over land. This remains a poorly understood phenomenon. The Stanford VLF group has recently deployed a Very Low Frequency (1 MHz sampling rate) radio receiver system aboard the NOAA Ronald W. Brown research vessel. The goal of this transatlantic experiment is to improve our understanding of oceanic lightning and to investigate the physical difference between oceanic and land lightning. When positioned reasonably close to deep oceanic thunderstorms, the LF-VLF receiver aboard the Ronald W. Brown detects the impulsive radio emissions from the return stroke, up to 1 MHz, which enables us to estimate the return-stroke waveform shapes generated by the lightning channel. In this presentation, we present our experimental setup and a summary of the data collected during the transatlantic voyages of the NOAA ship. We process lightning-generated waveforms, compare them to LF-VLF data from land lightning over Oklahoma, extract statistical patterns, and compare the data to numerical and analytical models.

KEYWORDS: 3324 ATMOSPHERIC PROCESSES Lightning, 3360 ATMOSPHERIC PROCESSES Remote sensing.

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