Lightning Geolocation Using V-POTEKA Lightning Observation Network

Authors

Ms. Loren Joy Estrebillo - Hokkaido University

Prof. Mitsuteru Sato - Hokkaido University

Prof. Yukihiro Takahashi - Hokkaido University

Abstract

A ground-based lightning observation (V-POTEKA) network has been developed to monitor the lightning activity over the western North Pacific (WNP) region. Three stations have been installed in the Philippines, Guam, Palau on September 2017, and an additional station at Okinawa on March 2019. The V-POTEKA system uses and event-trigger method that detects radio wave pulses from lightning strikes in the very low frequency (VLF) range of 1-50 kHz. It consists of VLF sensors, an automatic data-processing unit, and an automatic weather station (AWS). The V-POTEKA system analyzes lightning data, extracts pertinent information, i.e., time of the triggered waveform and its peak amplitude, and transmits data to a server through 3G communication. A geolocation software using the difference in time-of-arrival method is developed using the 4 sites along the WNP region. The highest lightning activity was observed during late evening and the lowest activity at daytime. We analyzed lightning activity and TC intensification of select tropical cyclones that originated within the vicinity of the WNP region.

Topic Areas

Lightning and Weather

Submission Format

Poster