

Monitoring of lightning activity in the Maritime Continent based on radio observation in 1-100 Hz band and 0.1-40 kHz ba

YAMASHITA, Kozo^{1*} ; OHYA, Hiroyo² ; TAKAHASHI, Yukihiro³ ; TSUCHIYA, Fuminori⁴ ; SATO, Mitsuteru³

¹S, ²Chiba University, ³Hokkaido University, ⁴Tohoku University

Based on measurement of electromagnetic wave radiated from lightning discharge, we can estimate location and electrical properties of each event. In the recent studies, lightning data is focused on as an effective proxy for the monitoring of thunderstorm that causes severe weather. In the previous works, occurrence of lightning discharge has been mainly used. However, recent observation indicates that there is huge lightning whose scale is more than hundreds times bigger than that of averaged one. Lightning data including " occurrence " and " scale " makes it possible to monitor thunderstorm activity quantitatively.

In this works, lightning observation network in the MC based on electromagnetic measurement in ELF and VLF band is summarized. This network is developed to estimate not only spatial distribution but also scale one of lightning discharges. We have already installed receivers in 0.1-40 kHz band at Tainan in Taiwan (23.1N, 121.1E), Saraburi in Thailand (14.5N, 101.0E), Pontianak in Indonesia (0.0N, 109.4E), Los Banos in Philippines (14.2N, 121.25E) and Son Tay in Viet Nam (21.1N, 105.5E). For ELF observation, receiver in 1-100 Hz is installed in Onagawa, Japan (38.4N, 141.5E). Data obtained by multipoint observation is synchronized by GPS receiver installed at each station.

At the presentation, we will show the initial result to derive scale distribution of based on the measurement of ELF and VLF sferics.

Keywords: lightning, ELF, VLF, the Maritime Continent, charge moment