

SATREPS project for development of extreme weather monitoring and alert system in the Philippines

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Thunderstorm causes torrential rainfall and is the energy source of typhoon. In these decades it has been revealed that lightning discharge is a very good proxy of thunderstorm activity. However, no operational and sustainable observation system that can provide information of charge moment changes for most of lightning strokes has been established. On the other hand, 50-kg micro-satellite is now one of the operational tool for remote-sensing, which could be fabricated by developing countries. SATREPS project titled “Project for development of extreme weather monitoring and alert system in the Philippines” will be carried out in the fiscal years of 2017-2021 under bilateral cooperation between Japan and Philippines supported by JST and JICA. In this project, we make use of two new technologies, that is, the lightning activity estimated by the ground-based lightning networks with ~10 sites for VLF radio wave measurement in nation-wide of Philippines and with ~50 sites for electrostatic field measurement in Metro Manila, and the 3 dimensional capturing of thunderstorms by the on-demand operation of remote-sensing by 50-kg micro-satellites. We will establish a new way to obtain very detail semi-real time information of thunderstorm and typhoon activities that cannot be achieved only with existing observation methods. Based on these new techniques together with advanced radar system and drop/radio sondes, we will try to construct the cutting-edge observation system to monitor the development of thunderstorm and typhoon, which may greatly contribute to the prediction of disasters and the public alerting system.

Keywords: lightning, micro-satellite, thunderstorm