

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

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ULAT, **Understanding Lightning and Thunderstorm**, “Project for development of extreme weather monitoring and alert system in the Philippines” under SATREPS is now going to 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 together with infrasound sensor and automated weather station, and the 3 dimensional capturing of thunderstorms by the on-demand operation of 50-kg micro-satellites, including the first Philippine-developed satellite, DIWATA-1. We plan to establish a new way to obtain very detail semi-real time information of thunderstorm and typhoon activities that cannot be achieved only with conventional existing observational methods. Based on these new observations together with advanced radar measurements and drop/radio sondes campaigns, 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.

In fiscal year of 2017 we conducted the development of lightning observation system which will be installed at 10 nation-wide stations and 50 Metro Manila stations in Japan, and started the test observation at Quezon city, Philippines and Palau. In 2018 we will complete the installation at 1/3 of Metro Manila network and 1/2 of nation-wide network. As for the satellite data analysis, we succeeded in making 3-D cloud structure with telescope (HPT) or wide angle spectral camera (SMI) onboard DIWATA-1. Next step is to establish the real-time target pointing operation with micro-satellite. Adding to DIWATA-1, three more our satellites, namely, RISESAT, MicroDragon and DIWATA-2 will be launched in fiscal year of 2018. Ground facility to receive the satellite data in Philippines will be installed also in 2018 FSY. In summer typhoon season, drop sonde campaign using airplane in the eastside of Philippines will be carried out under collaboration with Nagoya University team.

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