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Quasi-Real Time Monitoring of Lightning and Weather in the Philippines and Western North Pacific for the Severe Weather Intensity Prediction

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As many severe weather events, such as torrential rainfall, tropical cyclones, tornados, and downbursts, are closely related to lightning activities, a continuous monitoring of thunderstorms is a key component for the prediction of the severe weather intensity development and for mitigating the natural disasters caused by these severe weather events. The integration of lightning data has the high potential contributing to short term forecasts of thunderstorms, further meteorological studies, and supplement disaster risk response strategies. This presents the activities and current status of the Understanding Lightning and Thunderstorm (ULAT) project, which is led by Hokkaido University and other Japanese institutes and Advanced Science and Technology Institute (ASTI), Department of Science and Technology (DOST) in the Philippines supported by the Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST). The ULAT Project is aimed at the following: a) establishment of a dense network of lightning and weather detectors in Metro Manila and nearby municipalities in order to provide thunderstorm “now-casting” and supplement weather-related research and disaster response studies and strategies; b) establishment of a ground receiving station for the direct reception of the satellite imagery and utilization of existing ground receiving facilities in order to develop effective observation methods by comparing 3D structures of thunderclouds from satellite images with lightning/precipitation data; c) establishment of a methodology for short term forecasts; and d) development of software for sharing information on short term forecast weather to concerned agencies. Especially for the purpose a), we have developed new lightning and weather observation systems, called as P-POTEKA and V-POTEKA. These systems can be automatically operated without any daily maintenance. So far, we have installed 35 P-POTEKA systems in Metro Manila and 7 and 4 V-POTEKA systems in the Philippines and in Indonesia, Palau, Guam, and Okinawa in Japan, respectively. At the presentation, we will show the updated status of this project and will show the initial results derived from the cross correlation analyses between

lightning activities monitored by V-POTEKA systems and the intensity developments of tropical cyclones.

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