



## **Operation of lightning detection network and micro-satellites for nowcast of thunderstorm and tropical cyclone activities**

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Lightning activity represents the thunderstorm activity, namely, the intensity and area of precipitation and/or up-draft. Thunderstorm is also important as a proxy of the energy input from ocean to atmosphere inside tropical cyclone, meaning that if we could monitor the thunderstorm with lightning we could predict the maximum wind velocity or minimum pressure near the center of the tropical cyclone by one or two days before. Constructing ELF observation sites, international/nation-wide VLF observation networks and a regional dense network of slow antennas installed at about 50 automated weather stations in Metro Manila, we plan to establish the monitoring system for thunderstorm development in western pacific warm pool (WPWP) where typhoon is formed and in detail in Metro Manila. Making use of the lightning activity data measured by the ground-based networks, we could operate micro-satellites, such as DIWATA-1 developed by Philippines, to make stereo imaging for estimation of 3-D structure and the speed of development of thunderstorm. We would establish a new methodology to obtain very detail semi-real time information that cannot be achieved only with existing observation facilities, such as meteorological radar or large meteorological satellite. Using this new system we try to issue nowcast for the local thunderstorm and for tropical cyclones. The 5-year project in Philippines will start in coming April.