Thunder Cloud Project : Ground-based multipoint radiation measurement campaign of high-energy atmospheric phenomena

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In winter, we frequently observe low-altitude thunderstorms and powerful lightning discharges in the coastal area along the Sea of Japan. Since 2006, the Gamma-Ray Observation of Winter THunderclouds (GROWTH) collaboration has been measuring gamma-ray glows, high-energy radiation from thunderstorms, in this area. Recently, we are expanding this project to a multi-point radiation measurement network at the Kabazawa city, which was named 'Thunder Cloud Project', and being collaborated with ground-based radio monitoring of lightning discharges. We also developed several versions of handy radiation detectors. Every winter, this new observation campaign has been detecting not only many gamma-ray glows from thunderstorms but also photonuclear reactions triggered by lightning discharges. In 2020, we are working to make our observation network a new citizen-supporting program, in which citizen supporters will deploy our handy detectors in their home. Here we summarize our recent progress and future prospect of the Thunder Cloud Project.