

## 1.28 HYDROMETEOR CLASSIFICATION BY PORTABLE X-BAND POLARIMETRIC RADAR OF KOCHI UNIVERSITY

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Kochi prefecture faces on Pacific Ocean where the Kuroshio Current flows and its north boundary is Shikoku Mountains of more than 1500m. Then, many heavy rain events occur. Many heavy rain events are accompanied by lightning but sometimes without lightning. Some thunderstorms have many positive cloud-to-ground lightning events even in summer season. Therefore we need to clarify the structures of hydrometeor distribution in various kinds of thunderstorms. As the first step of our work to solve such problem, the present study aims to verify the availability of hydrometeor classification algorithm for the portable Xband polarimetric radar in Kochi University.

We identified hydroclass type using hydrometeor classification method based on fuzzy logic (Kouketsu et al. 2015). In this method, raw data; received power (dBm),  $\phi_{dp}$  (deg.) and  $\rho_{hv}$ , observed by PPI scans up to 16deg. in elevation angle are used for attenuation correction of polarimetric parameters,  $Z_h$ ,  $Z_{dr}$ ,  $K_{dp}$  and  $\rho_{hv}$ . Then we compared these values and their beta function in order to identify hydrometeor. We also used background temperature obtained from mesoscale model initial value provided from Japan Meteorological Agency. The data of hydrometeor classification were compared with the data obtained by a disdrometer and visual observation.

As the preliminary results, we identified snow and graupel in relatively low cloud of less than 5 km in top heights in snow day, 10 February 2017. The data obtained by the disdrometer also show the existence of same particles. We also observed dry graupel upper the level of -10 degrees Celsius in the developing stage of thunderstorm when the lightning was active. On the other hand, there are wet snow and wet graupel in the melting layer of the decaying thunderstorm.

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