



A test for Improvement of high resolution Quantitative Precipitation Estimation for localized heavy precipitation events

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Accurate estimation of precipitation is one of the most difficult and significant tasks in the area of weather diagnostic and forecasting. In the Korean Peninsula, heavy precipitations are caused by various physical mechanisms, which are affected by shortwave trough, quasi-stationary moisture convergence zone among varying air masses, and a direct/indirect effect of tropical cyclone. In addition to, various geographical and topographical elements make production of temporal and spatial distribution of precipitation is very complicated. Especially, localized heavy rainfall events in South Korea generally arise from mesoscale convective systems embedded in these synoptic scale disturbances.

In weather radar data with high temporal and spatial resolution, accurate estimation of rain rate from radar reflectivity data is too difficult. Z-R relationship (Marshall and Palmer 1948) have adapted representatively. In addition to, several methods such as support vector machine (SVM), neural network, Fuzzy logic, Kriging were utilized in order to improve the accuracy of rain rate. These methods show the different quantitative precipitation estimation (QPE) and the performances of accuracy are different for heavy precipitation cases.

In this study, in order to improve the accuracy of QPE for localized heavy precipitation, ensemble method for Z-R relationship and various techniques was tested. This QPE ensemble method was developed by a concept based on utilizing each advantage of precipitation calibration methods. The ensemble members were produced for a combination of different Z-R coefficient and calibration method.