

Classification of heavy rainfall and fuzzy-logic application for improving quantitative precipitation estimation using doppler radar

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Precipitation estimation using Doppler radar has many advantages such as high resolution, real time estimation but radar data is biased by various uncertainties, and so the uncertainty classification and quantification is very important to improve this estimation. These uncertainty is generated because of spatial and temporal discrepancy between radar and rainfall station. Our research had suggested the alternatives for considering these discrepancies by applying time delay in temporal and cloud shifting model in spatial but the results are not yet satisfied. If radar would detect the shape of cloud and its vertical profile, the performance of this estimation would be improved significantly. But our measuring equipment cannot detect these data precisely, only can detect the intensity of cloud at 1.5 km altitude. So for overcoming these obstacles, our strategy is modified as classfying heavy rainfall based on radar intensity, after fuzzyfying into the intervals which is same as the form of radar intensity presented into public users. As a results, correlation factor of the model is improved from 0.27 into 0.78.