

13.30 PARAMETER ESTIMATION OF Z-R RELATIONSHIP FOR FLASH FLOOD WARNING SYSTEM

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In this study, a new method for estimating the parameters of Z-R relationship was proposed aiming at the application to the Flash Flood Warning System (FFWS). Generally, the parameters are estimated to minimize the mean square error between the radar rain rate and the observed rain rate on ground, which has the highest accuracy around the mean rain rate value. It is also well known that the radar rain rate based on this Z-R relationship provides somewhat over-estimated values in the small rain rate zone, but rather under-estimated values in the high rain rate zone. As the FFWS targets a very high rain rate (i.e., flash flood guidance), the radar rain rate based on the Z-R relationship cannot show a good accuracy. To overcome this problem, this study proposed a new method to estimate the parameters of the Z-R relationship aiming at the target high rain rate value. This method is based on the re-analysis of the drop size distribution (DSD) and the parameters of the Z-R relationship. Exponential and gamma distribution were considered in this re-analysis. Also, as an application example, this study analyzed the data from Biseulsan radar in Korea. As a result, it could be shown that the newly estimated Z-R relationship has a higher accuracy at the target rain rate zone than that estimated by the conventional method.