

Bias-correction of Dual Polarization Radar rainfall using Convolutional Autoencoder

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Abstract

Recently, As the frequency of localized heavy rains increases, the use of high-resolution radar data is increasing. The produced radar rainfall has still gaps of spatial and temporal compared to gauge observation rainfall, and in many studies, various statistical techniques are performed for correct rainfall. In this study, the precipitation correction of the S-band Dual Polarization radar in use in the flood forecast was performed using the ConvAE algorithm, one of the Convolutional Neural Network. The ConvAE model was trained based on radar data sets having a 10-min temporal resolution: radar rainfall data, gauge rainfall data for 790minutes(July 2017 in Cheongju flood event). As a result of the validation of corrected radar rainfall were reduced gaps compared to gauge rainfall and the spatial correction was also performed. Therefore, it is judged that the corrected radar rainfall using ConvAE will increase the reliability of the gridded rainfall data used in various physically-based distributed hydrodynamic models.

Keywords : Dual Polarization Radar, ConvAE, CNN, Bias-Correction

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