

## Effect of CAPPI Structure on the Performance of Radar Quantitative Precipitation Estimation using Long Short-Term Memory Networks

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### Abstract

The performance of radar Quantitative Precipitation Estimation (QPE) using Long Short-Term Memory (LSTM) networks in hydrological applications depends on either the quality of data or the three-dimensional CAPPI structure from the weather radar. While radar data quality is controlled and enhanced by the more and more modern radar systems, the effect of CAPPI structure still has not yet fully investigated. In this study, three typical and important types of CAPPI structure including inverse-pyramid, cubic of grids 3x3, cubic of grids 4x4 are investigated to evaluate the effect of CAPPI structures on the performance of radar QPE using LSTM networks. The investigation results figure out that the cubic of grids 4x4 of CAPPI structure shows the best performance in rainfall estimation using the LSTM networks approach. This study give us the precious experiences in radar QPE works applying LSTM networks approach in particular and deep-learning approach in general.

**Keywords :** QPE, LSTM, Weather radar, CAPPI structure.

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