

Improving radar echo Lagrangian extrapolation by blending numerical model wind information: statistical performance of typhoon cases

*kao-shen chung¹, I-An Yao¹, Hsin-Hung Lin²

1. National Central University, 2. National Science and Technology Center for Disaster Reduction

In this study, by using composite radar data from Central Weather Bureau (CWB), 16 typhoons are selected to examine the performance of the McGill Algorithm for Precipitation nowcasting using Lagrangian Extrapolation (MAPLE) over Taiwan area. In addition, instead of blending the precipitation between radar extrapolation and numerical model as previous studies, information of wind is blended to improve the nowcasting system. It is found that the hybrid system could capture and maintain the circulation of rotation and rain-band structure much better than the original system.

To validate the performance of nowcast, continuous and categorical verifications are applied. In addition, neighborhood method as FSS score is also examined. For 16 typhoon cases, results of radar extrapolation show the quantitative precipitation nowcasting could last at least 2 hours. When blending the wind information from numerical model, it is able to improve the performance of nowcast for another 1 hour, which extends the capability of nowcast up to 3 hours. Furthermore, it is found the hybrid system performs better after typhoon landed over Taiwan even though orographic effect has to be considered.

Keywords: nowcast, radar extrapolation , numerical model